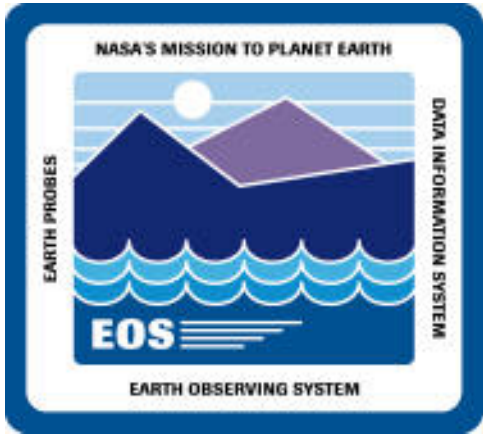


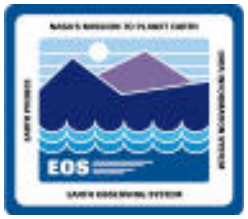
External Data Providers

Lynne Case

lcase@eos.hitc.com

24 April 1996

External Data Provider Agenda



Release B Requirements

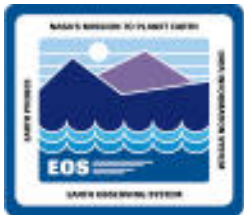
Overview of Terms

Advertising Service Options

One-Stop Shopping Options

Two-way Interoperability

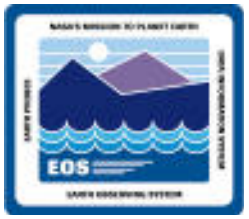
Release B Requirements for ECS DAACs



Release B Requirements driving ECS to complex infrastructure:

- **Security for billing and accounting purposes**
- **Security for restrictions on data sets.**
- **Security aspects are cross-DAAC, so user only has to register with one center to get to all EOS data and services.**
- **Request Tracking across independent entities and agencies.**
- **High Availability of ECS Services, requiring tight system monitoring of services.**
- **Distributed search capability across disparate database designs.**
  - **Requires complex management of the user view to allow for this.**

Implications of Release B Baseline Requirements



ECS provides two modes of interoperability:

(1) Loosely coupled publishing of services.

- **Advantage is ECS puts less requirements on the external provider in this mode.**
- **Disadvantage to the external provider is that the ECS user sees less of the providers services (through the ECS Advertising Service only).**

(2) More tightly coupled interaction with ECS infrastructure and middleware.

- **Advantage is that more ECS users gain access to the data and services in a more transparent manner. See one-stop shopping concept later.**
- **Disadvantage is ECS requires a certain COTS software set to work in this mode. In particular DCE.**

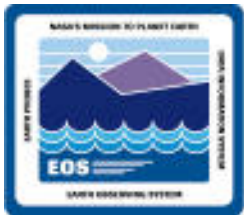
Evolutionary Requirements

Number	Requirement Description
EOSD5000	ECS shall enable the addition of other data providers, e.g. DAACs, SCFs, ADCs, ODCs, which may: - provide heterogeneous services, i.e. services in support of EOS which may be less than or different than ECS services - be connected with varying topologies - have variable levels of reliability or operational availability
EOSD5010	ECS shall enable extended provider support, i.e. client access of data and services at SCFs and DAACs, as authorized, without distinction to the client.
EOSD5040	ECS shall enable the combination of services from ECS and other data providers in arbitrary, ie. non-predefined, ways as needed by users to conduct EOS science.
EOSD5060	ECS shall enable interoperability with equivalent international systems, e.g. European and Japanese systems, to support the following: a. Browse services b. Data retrieval services
EOSD5100	ECS shall enable evolution of ECS to be a federated unit within GCDIS, e.g., GCDIS data centers should not have to negotiate different interfaces with each DAAC.

Evolutionary Requirements (cont.)

Number	Requirement Description
EOSD5110	ECS shall enable the separate use of ECS data management, data processing, or data archive and distribution software components by a GCDIS data center. The GCDIS data centers will have full responsibility for integration of those components within their environment. Interfaces between the components must be developed to serve the mission of EOSDIS, but be made available for a GCDIS data center.

Definitions of Terms



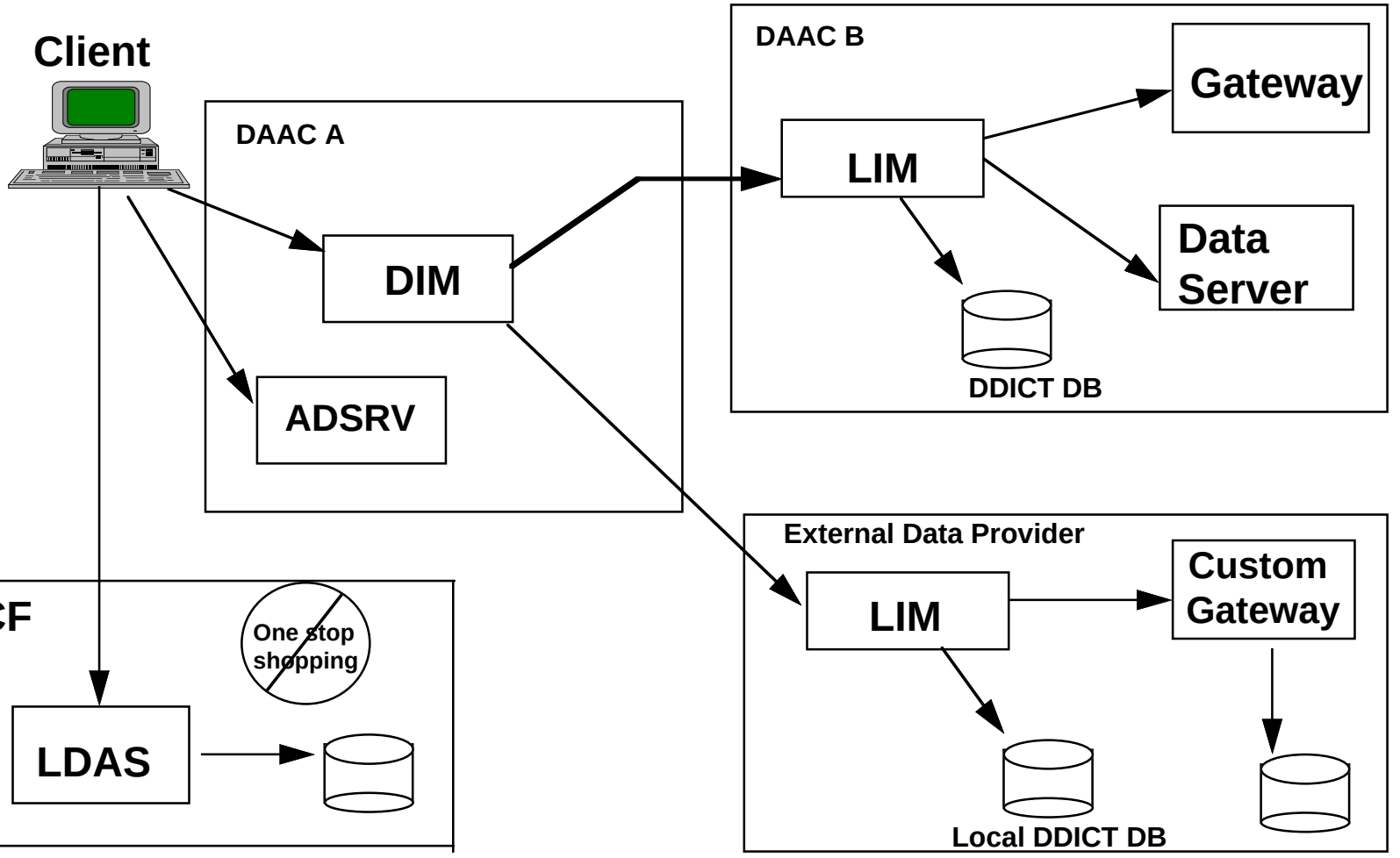
One Stop Shopping - The ability to query the EOSDIS network (originating from an ECS client) without knowledge of architecture, location of data, etc.

Federated schema - multiple related schema viewed as one schema

Integrated schema - mapping of disparate schema into a common definition

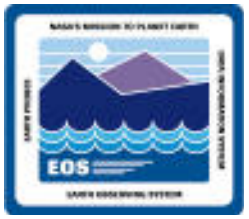
ECS Common schema - documented in DID 311

One Stop Shopping



*** IGNORE the missing components and interfaces, removed to keep a cleaner diagram

External Provider Options



EOSDIS Advertising Network

- **Internet Service (a URL)**
- **Service with Data Provider supplied**
- **Local Data Access Server (LDAS) with ECS client**

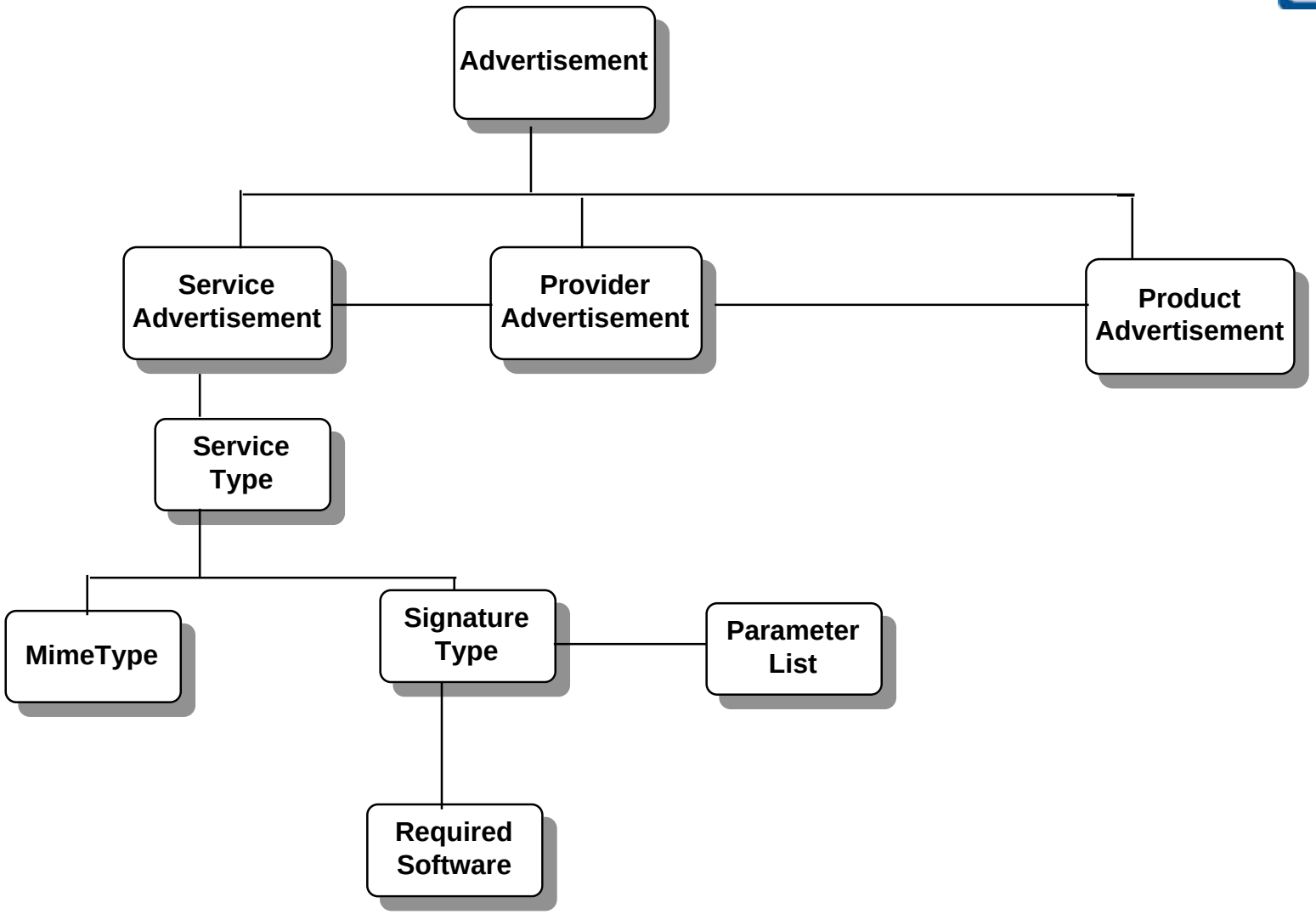
EOSDIS One-Stop Shopping Network

- **LIM with one or more of the following**
  - **Custom gateway (starting with V0 gateway)**
  - **LDAS**
- **LIM modified as a gateway to custom system**

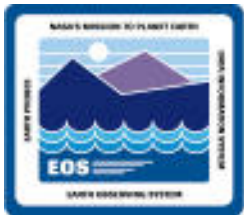
Two-way interoperability gateway/DIM component

- **Currently used in interoperability with ASTER**

Service Advertisement Model

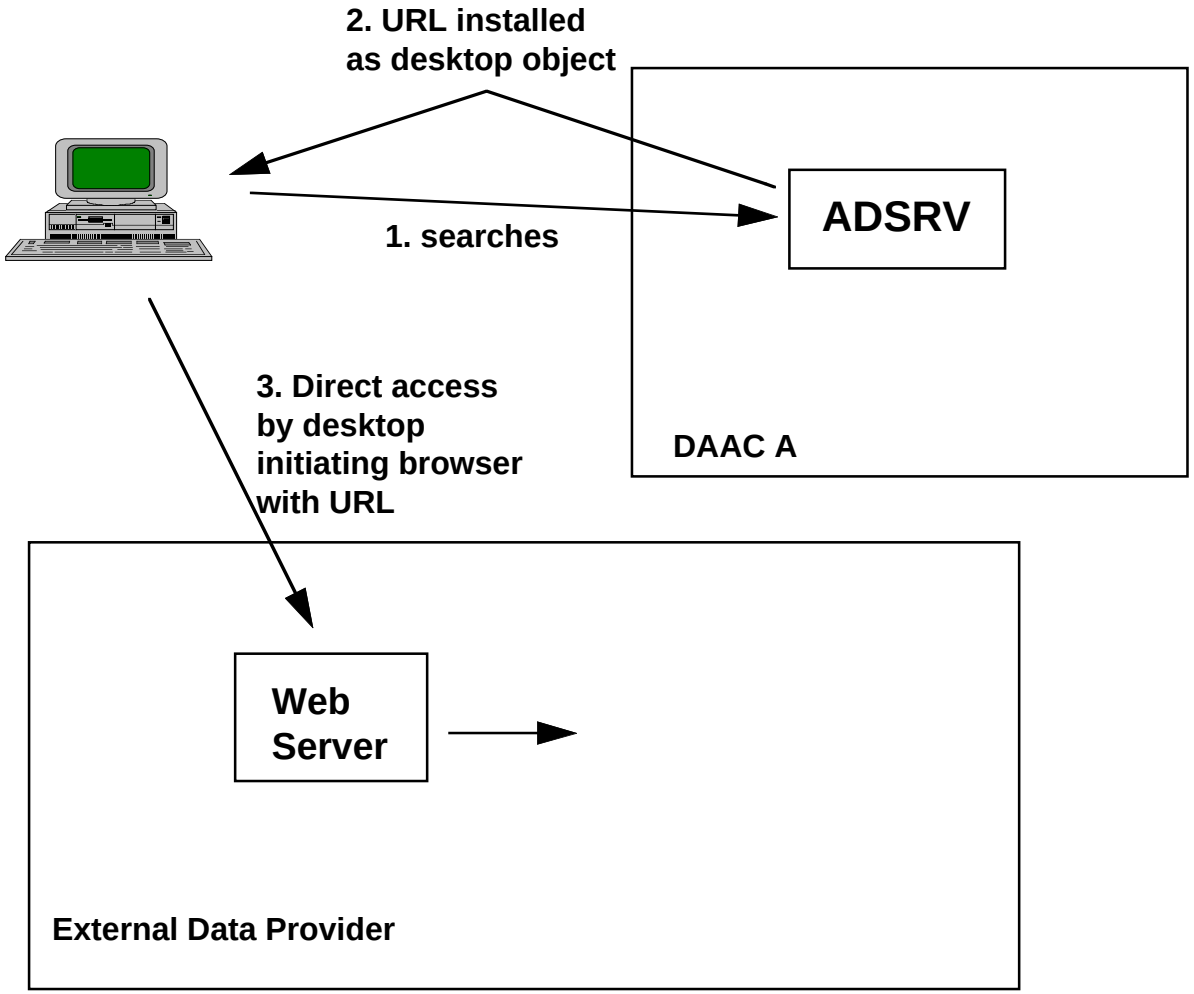


Internet Service

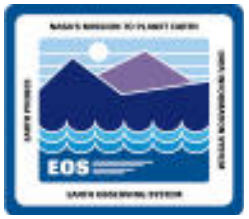


- Service provider specifies a Mime Type service advertisement
- Besides the name and description of the service, the only other requirement is the URL to the service.
- Could contain Java Applets or other advanced features. It will be up to service provider to determine user's browser capabilities, if they want to service low-end users.
- Installation means:
  - A desktop object is installed on the user's desktop.
  - The action associated with the object is to start the user's Web browser with the URL associated with the service.
- Invocation means:
  - The URL associated with the service is activated and loaded in the browser.
- The user is responsible for making sure that the browser that he/she is using is compatible with the capabilities of the site being accessed. In other words, if Java is required, the user should use Netscape to use the Java features.

Internet Service Architecture

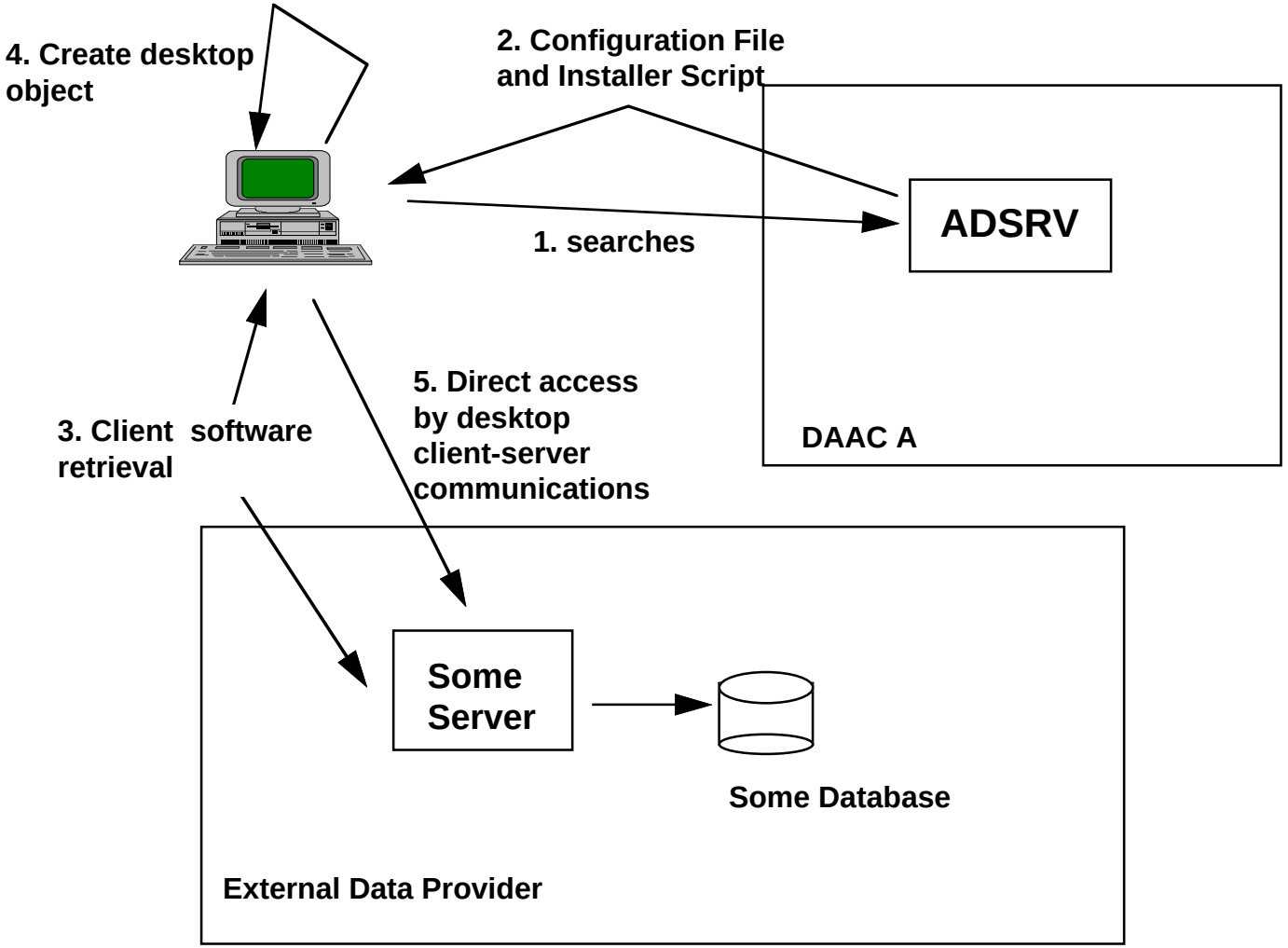


Data Provider Supplied Client

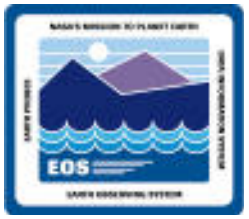


- Data Provider supplies advertisement which is signature type advertisement.
  - Includes Required Software specification to tell installer program what to install on client.
  - Script to run the installation and configuration file that will get passed to client or will be used to determine the command line arguments used to initialize client.
  - Advertising Service will describe the installation script and configuration file formats. These will be bourne shell scripts with some special environment variables to allow the provider to substitute things from the advertising service (for example, the name of the product advertisement)
- User will have to provide location to install the client and where to put the desktop object.
- Installer will execute the Data Provider's script and create desktop objects as appropriate.
- After completion, ECS (potentially) has no involvement between the user and the data provider.

Data Provider Supplied Client Scenario



LDAS Service with ECS Client



Data Provider needs to install the LDAS software and define the schema.

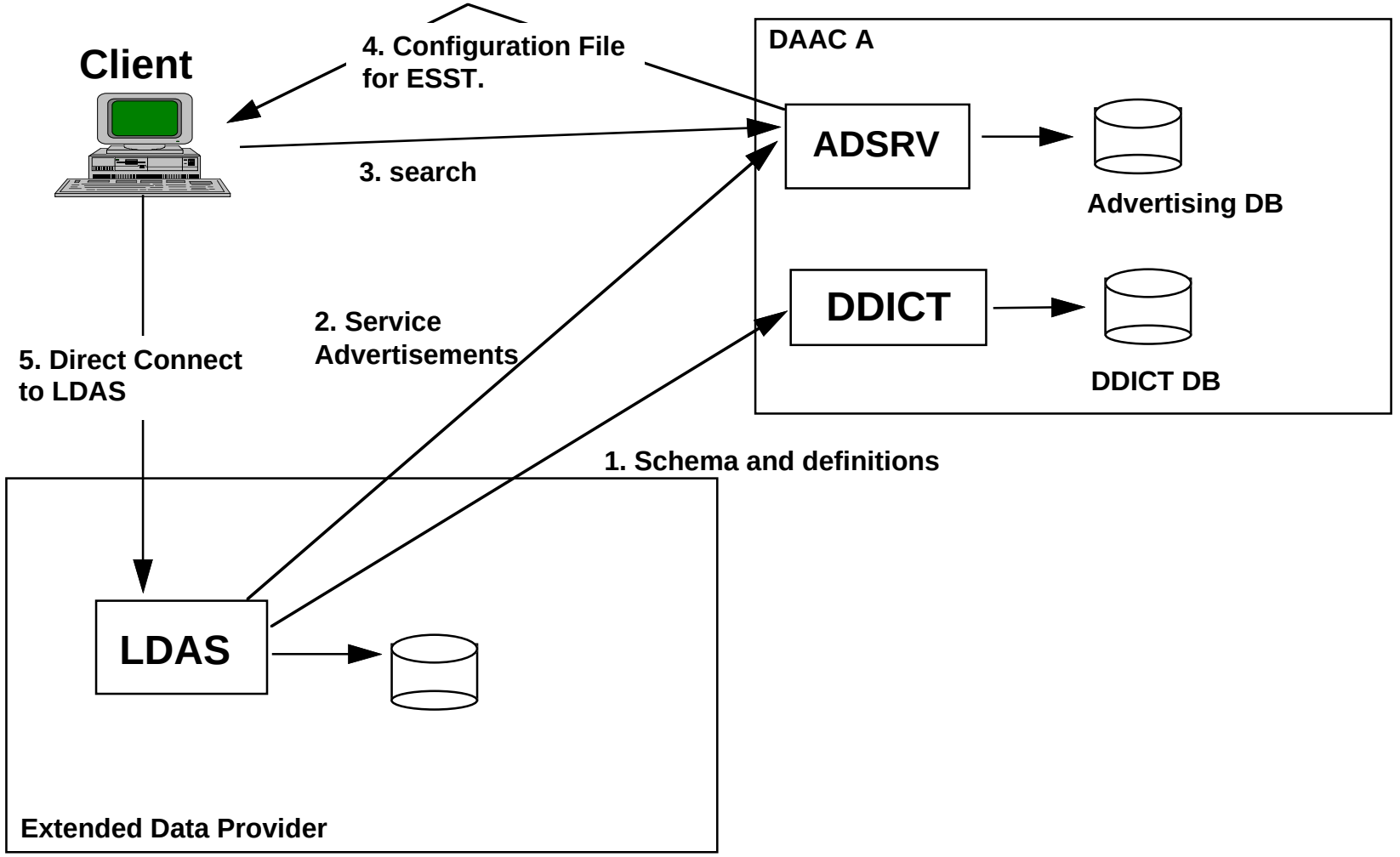
- **Data Provider must get permission from a DAAC to write to the DDICT.**
- **Schema gets exported to DDICT using normal Data Server methods. It does not get integrated into any LIM/DIM.**
- **Data Provider submits signature type service advertisements for those services they will provide.**
- **Specify the required software as the ECS Earth Science Search Tool (ESST) with the proper configuration.**

Installer will create a desktop object with the ESST and the proper UR to the Data Provider site.

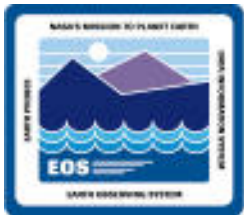
ESST will see the Data Provider as a direct connect to a Data Server.

- **Uses advertising service to determine the services available at that provider.**
- **Uses data dictionary to determine the attributes and valid values.**
- **All requests will go directly to Data Providers “data server”.**

Data Provider with LDAS



One-Stop Shopping Scenarios



All options require similar actions at the external provider site.

- **Installation of LIM, DDICT, and V0 Gateway or LDAS.**
- **Modification of V0 Gateway, IF V0 protocol is not being used.**

OR

- **Modification of LDAS, IF Illustra is not used as the DBMS.**
- **Modification of Mapping Layer in LIM or Gateway to provide site specific conversion of attributes from one format to another.**
- **Configuration of the LIM and/or Gateway, LDAS. More on this later....**
- **Configuration of DCE into a cell or coordinating already installed cells into a DAAC cell.**

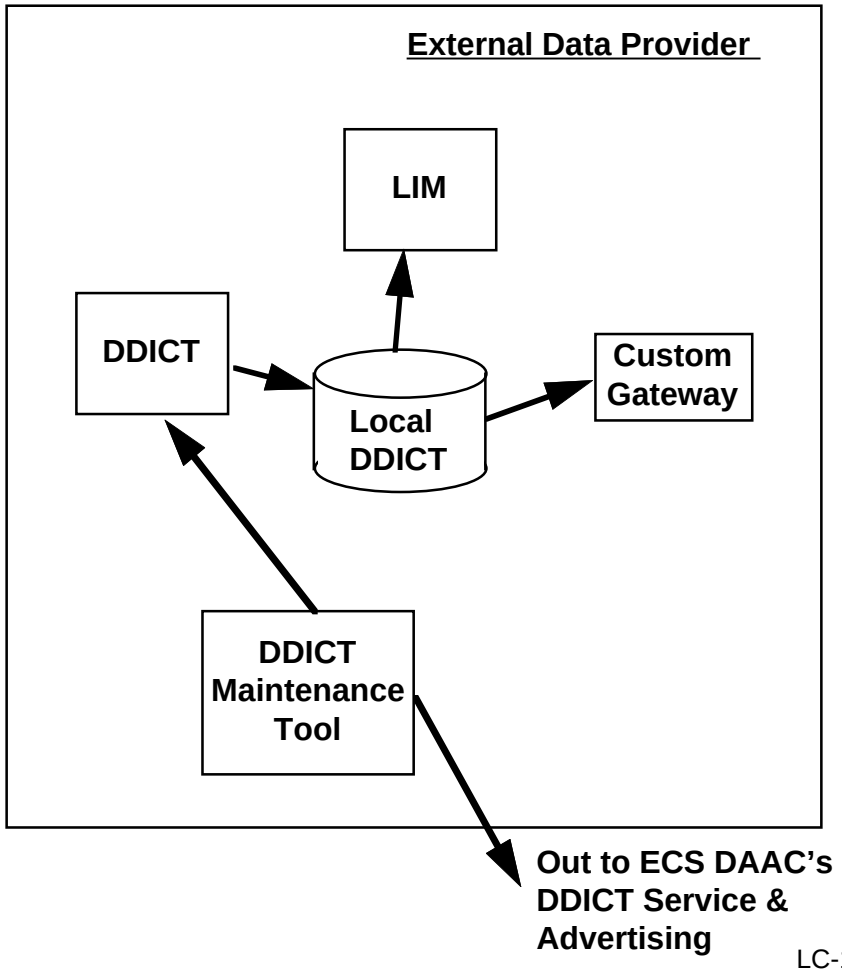
Following slides will walk through:

- **Setting up the external provider site.**
- **Adding the external provider to a DAAC DDICT and Advertising**
- **Execution of a search**

External Provider Setup

Activities being done by administrator at external provider:

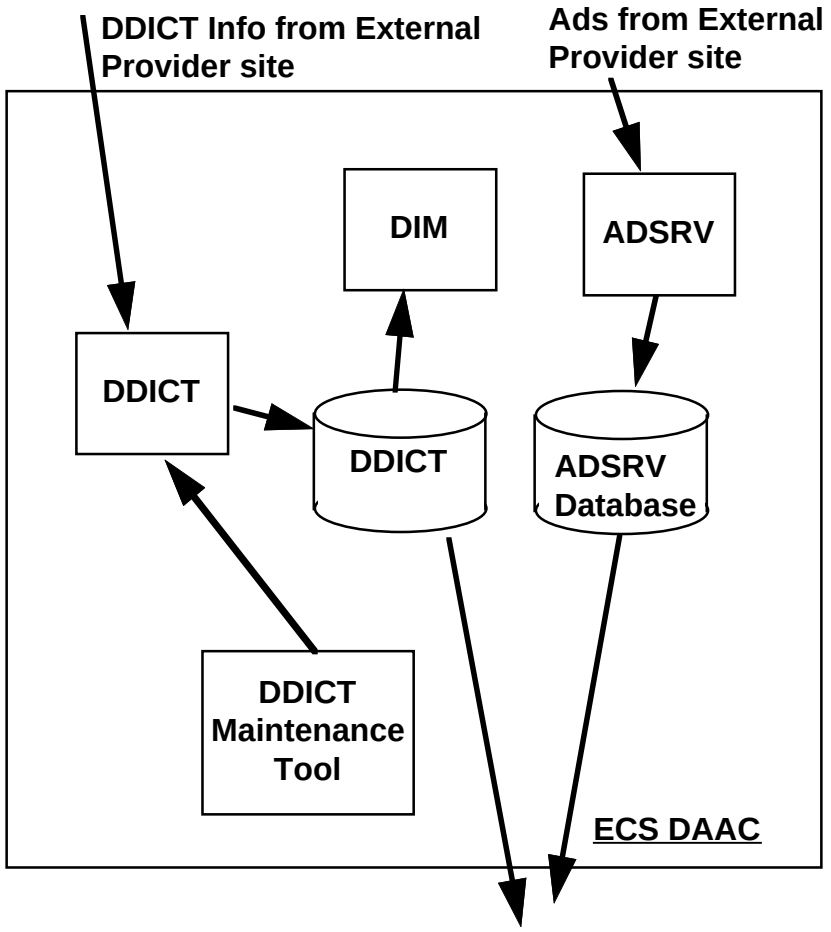
- **Defining the collections available through the Gateway.**
- **Defining the collection(s) available through the LIM and the relationship of the LIM to the Gateway.**
- **Reviewing the ECS Common Schema and mapping to local attributes available through the gateway.**
- **Relating these attributes to the collections previously defined.**
- **Advertising the services available at the LIM and Gateway.**



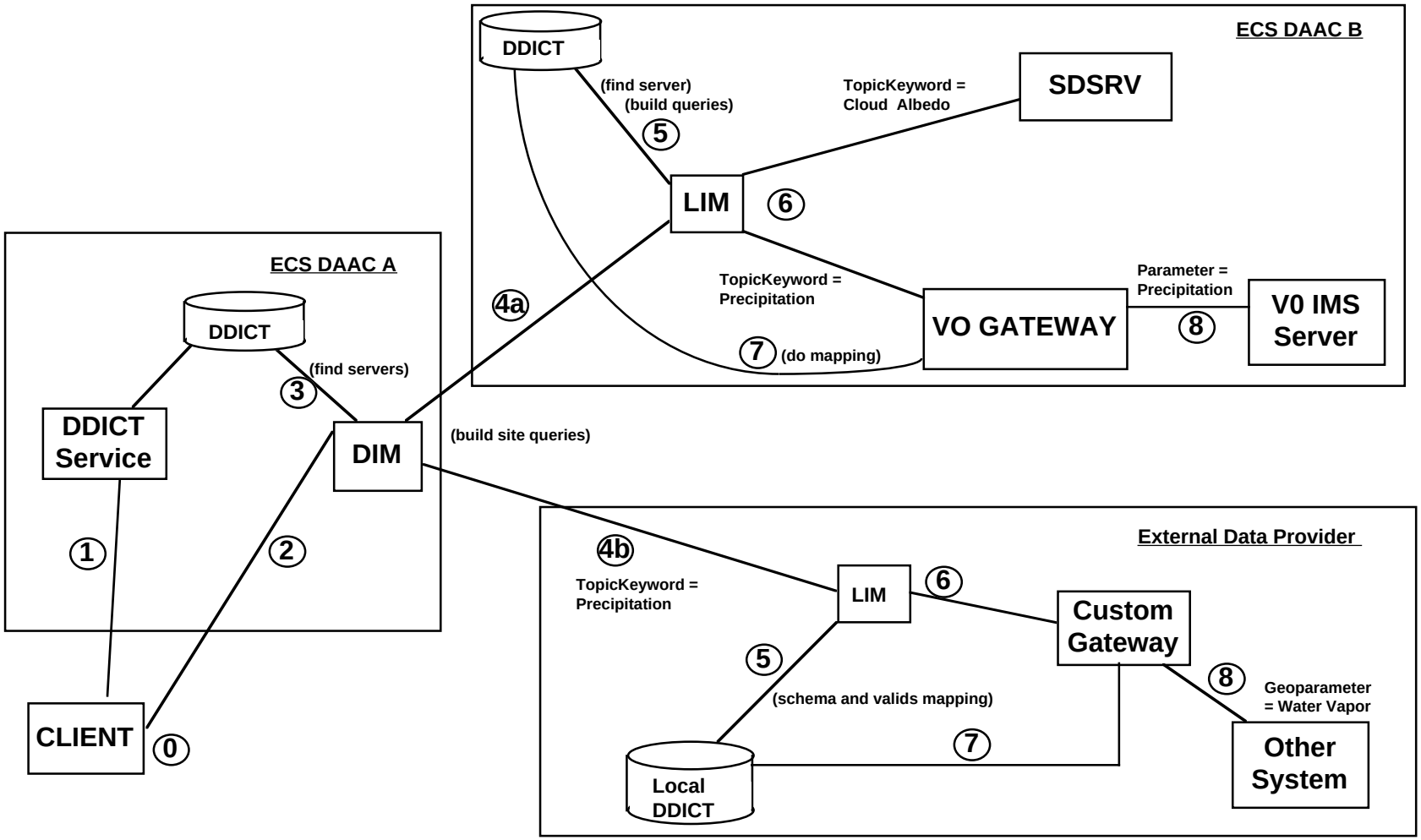
Inclusion of Provider in One-Stop Shopping

Activities performed by administrator(s) at a DAAC:

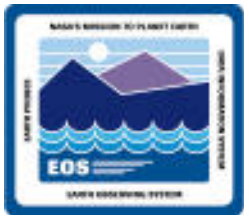
- **Administrator receives notification that new DDICT info has arrived.**
- **Administrator uses maintenance tool to review the new information.**
- **Administrator connects the new collections to the available collections of the DIM.**
- **NOTE: This can be automated as a configuration of the DIM to automatically accept new collections.**
- **Moderator of Advertising approves the advertisements.**



One-Stop Shopping Scenario with Custom Gateway



Custom Gateway Scenario (0-3)



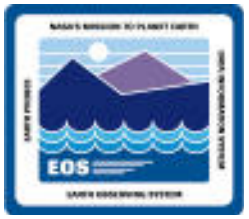
Step 0: User submits a simple inventory search query using ESST. User chooses ‘cloud albedo’ and ‘precipitation’ for the attribute ‘TopicKeyword'.

Step 1: ESST interacts with DDICT service and finds that Inv search request must be submitted to a DIM.

Step 2: ESST opens a session to the DIM and submits the Inv Search request.

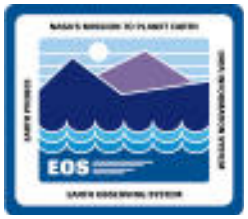
Step 3: DIM creates process plan, builds site queries by interacting with DDICT database.

Custom Gateway Scenario (Steps 4-7)



ECS DAAC	*External Data Provider*
Step 4a: **DIM submits Inv search request to a ECS LIM with TopicKeyword = ('cloud albedo' or 'precipitation')**	**Step 4b:** **DIM submits Inv search request to EDP LIM with TopicKeyword = ('precipitation')**
Step 5: **LIM creates processplan and build dataserver and V0 gateway queries by interacting with DDICT database.**	**Step 5:** **EDP LIM creates a processplan and builds custom gateway query**
Step 6: **LIM submits Inv search request to dataserver and V0 Gateway**	**Step 6:** **EDP LIM submits search request to custom gateway**
Step 7: **V0 Gateway does mapping of query to change TopicKeyword to Parameter**	**Step 7:** **EDP Custom Gateway does mapping of search to modify both the attribute name and value to Geoparameter= "Hydrometeor"**

Custom Gateway Scenario (Step 8)



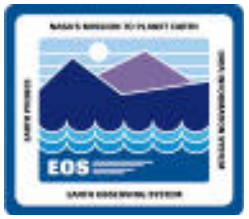
ECS DAAC

Step 8:
V0 Gateway submits search to V0 IMS Server

External Provider

Step 8:
EDP Custom Gateway submits search to Other System

COTS Requirements



For hosting a LIM and/or Gateway

- **DCE and OODCE**
- **Unix/POSIX workstation/server**
- **RogueWave DBtools**
  - **Comes from us tested with Sybase, Oracle can be supported without recompiling.**
  - **Used to access the DDICT database.**
- **RogueWave Tools.h**
- **Sybase ***

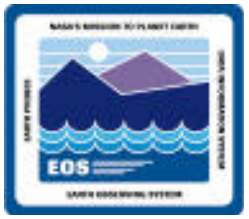
For hosting an LDAS

- **All of the above, plus Illustra ***

***** **Oracle can be used without changes to code (just different version of Dbtools.h), other DBMSs may require customization by the site.**

****** **Other DBMS can be used with customization by the site.**

Recommended Approach



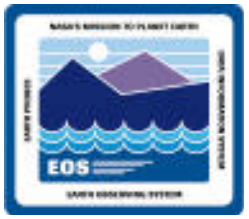
Recommended approach based on Release B design:

- **LIM & Gateway (V0 or Custom) or LIM & LDAS**
  - **External Provider customizes the gateway, not the LIM**
  - **Provides a stable interface to and from ECS**

Issues

- **Ability of External Data Provider to provide Request Tracking**
- **Permission from External Data Provider for automated Replication of DDICT & Advertising**

Two-Way Interoperability



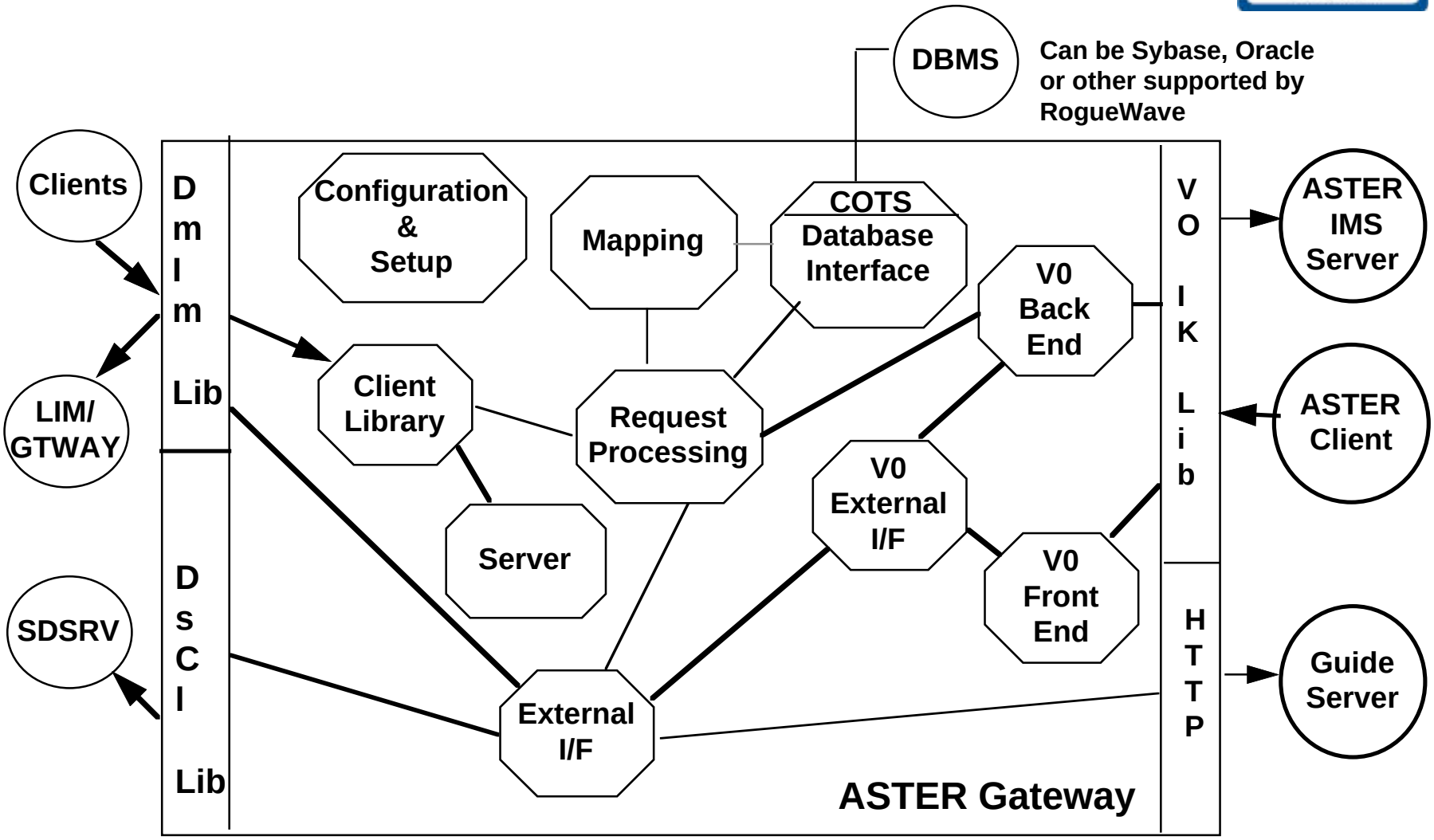
Two-way interoperability puts additional requirements on the Data Management Subsystem.

- **Different scope of queries depending on which direction you're going**

ASTER interoperability puts different requirements on the components than V0 interoperability

- **ECS-ASTER works like V0 gateway**
- **ASTER-ECS works like gateway on one side and DIM on the other**

Two-Way Interoperability Gateways



Local Data Dictionary Maintenance